REMARKS

Claims 46-52 are pending in the present application. Claims 1-45 have been canceled and claims 46-52 have been newly added as a result of this response. Claim 46 is independent.

Applicants assert that an AD converter according to new claim 46 solves a problem of an SDM to become unstable due to a too high input signal. The controlling means defined by new claim 46 is adapted to reduce the output signal of an integrator, for example, by a factor, such as defined by new claim 49. This is inherently different from the cited methodologies that either clamp the integrator output to a predetermined constant level or simply resets the integrator output to zero. In these prior art methodologies, signal information (of the state variable) is lost in an amplitude domain or a time domain. According to new claim 46, a substantial part of the signal information of the integrator is retained because only a limited portion of the integrator output signal is lost. The technical effect of the "soft clamping" defined in new claim 46 is an AD converter with a higher dynamic range not suffering from the severe distortion at high signal levels resulting from "hard" clamping procedures.

Heikkila describes in col. 3, lines 9-11: "According to the invention, such an MF modulator is stabilized by changing the value of the negative feedback of the modulator, when the modulator enters an unstable mode". This is also defined in Heikkila's claim 1. New claim 46 is inherently different since the monitored problematic integrator output value is directly reduced. Thus, a problematic state is immediately remedied, and as a result an instantaneous correction of an unstable state is obtained. Restoring to stable mode by adjusting negative feedback factors, such as suggested by Heikkila, has the

consequence that an unstable mode is indirectly restored since the effect of the adjusted negative feedback factors will need some time before the full effect on the signal swing will propagate through the integrator cascade. Thus, the stability restoring suggested by Heikkila will only restore to stable condition after a certain delay, and in addition the procedure is much more complicated to implement - either analog or in software.

In the Advisory Action, Examiner Wamsley is correct that Heikkila mentions, col. 3, lines 28-30, that outputs of one or more integrators can be monitored so as to detect an unstable mode - such as also defined by new claim 46. However, an AD converter defined by new claim 46 is inherently different from that described by Heikkila with respect to the means to remedy an unstable mode.

CONCLUSION

In view of the above amendments and remarks, reconsideration of the various rejections and allowance of claims 46-52 is respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John A. Castellano at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies to charge payment or credit any overpayment to Deposit Account 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY & PIERCE, PLC
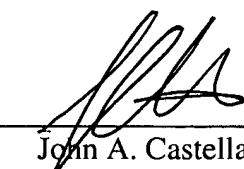
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